

Why Dust Control?

The What, Who, When, Why, and How of Maricopa County Dust Control Regulation



Maricopa County
Air Quality Department



WALK MORE USE CFLS MORE CARPOOL MORE
BIKE MORE RAKE MORE TELECOMMUTE
MORE DRIVE HYBRIDS MORE CONSOLIDATE
ERRANDS MORE RIDE PUBLIC TRANSPORTATION
MORE USE ENERGY EFFICIENT APPLIANCES
MORE CARRY REUSABLE TOTE BAGS MORE
CONSIDER SOLAR MORE RUN COLD WATER
CYCLES MORE USE REUSABLE CONTAINERS
MORE CONSERVE ELECTRICITY MORE REDUCE
WOODBURNING MORE RECYCLE MORE USE
ELECTRIC LAWN AND GARDEN EQUIPMENT
MORE REFUEL AFTER DARK MORE RIDE
THE BUS MORE RIDE THE LIGHT RAIL MORE
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**CLEAN AIR
MAKE
MORE**

Background Pollutants in the Air

- Certain air pollutants, called “criteria air pollutants,” are common throughout the United States. These pollutants can cause health problems, pollute the environment and cause property damage. These criteria pollutants are so named since the U.S. EPA has regulations on allowable levels of these substances on the basis of health-based criteria.
- Gases include carbon monoxide, ozone, nitrogen dioxide, and sulfur dioxide. Particulate matter (PM) pollution is also an airborne pollutant.



What is the Quality of Our Air?

- Air pollution
 - Gases such as CO, SO₂, & VOC's
 - Particulate matter (PM); a.k.a. dust
- Brown cloud
- No Burn Day
- High Pollution Advisory
- Health effects
 - Headache, nausea, eye irritation
 - Scarring of lung tissue, respiratory problems
 - Bronchitis, emphysema, cancer
 - Valley Fever



Particulate Matter

Particulate matter is composed of small solid and liquid particles suspended in the ambient air.

Research studies have associated exposure to elevated levels of these particles in the air with damaging health effects.



Whom Does Poor Air Quality Affect?

Everyone! *Especially sensitive populations*



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Sensitive Populations

- Certain sensitive populations, listed below, are susceptible to more serious symptoms, including cough, phlegm, wheezing, shortness of breath, bronchitis, increased asthma attacks, and aggravation of lung or heart disease. Exposure to fine particles is of particular concern, and can be associated with several serious health effects. Some sensitive people might experience health problems after even short exposures to fine particles, such as several hours or a day.
- Individuals with asthma and other respiratory diseases
- Individuals with cardiovascular disease
- The elderly
- Children

Source: EPA - http://www.epa.gov/wtc/pm10/pm_fact_sheet.html



Why Address Dust?

- Health risks
- Increased federal regulation
- Cost of non-attainment
 - Federal funding cut
 - Mandated reduction in permitting
 - Several billion dollars in highways funding

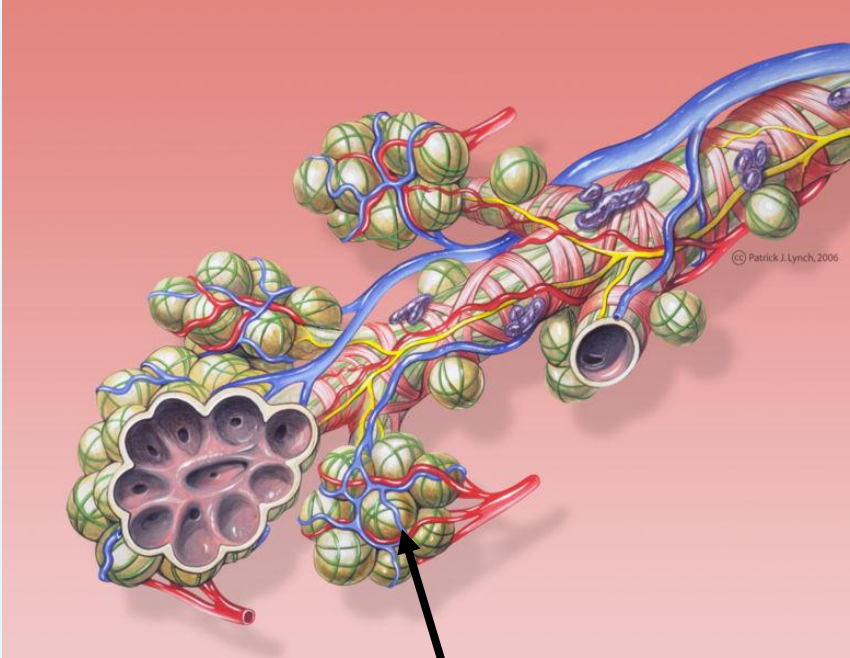
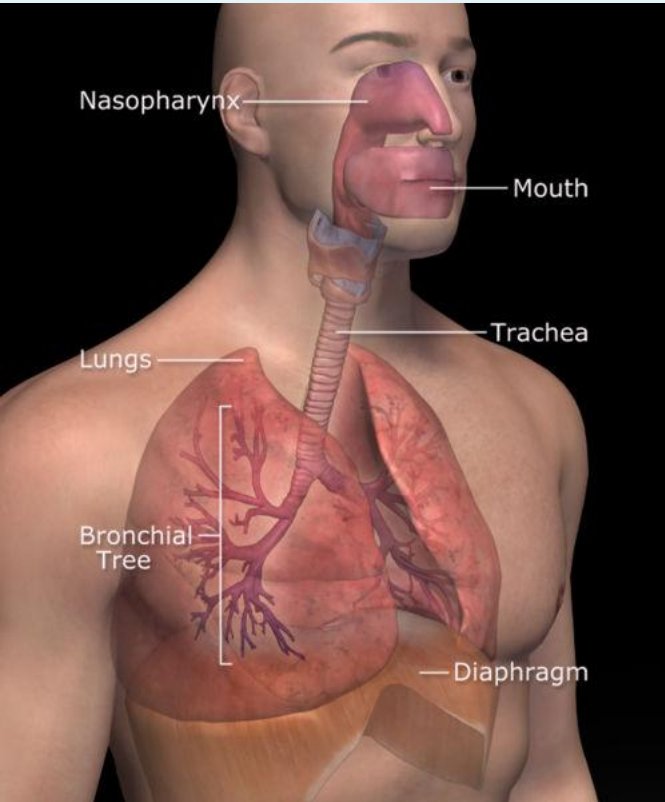


Biology

- Air is breathed through the mouth or nose, which acts as filtering system for the body, removing large pollutant particles.
- Air then passes through the pharynx, esophagus, and larynx before reaching the top of the trachea.
- The trachea divides into two parts – the right and left bronchi.
- The bronchi divides into increasingly smaller compartments called bronchioles.
- Bronchioles contain millions of air sacs called alveoli, this is the primary location for gas exchange (O_2 , CO_2) with the blood.



Biology



Alveoli are the spherical outcroppings of the respiratory bronchioles and are the primary sites of gas exchange with the blood.



Acute Effects

- Acute effects are usually immediate and are often reversible when exposure to the pollutant ends.
- Common acute effects include eye irritation, headaches, and nausea.



Chronic Effects

- Chronic effects sometimes take longer to become apparent, and tend not to be reversible.
- Chronic effects include decreased lung capacity, lung cancer, other respiratory problems, as well as cardiovascular ailments.



CLEAN AIR
MAKE
MORE

WALK MORE USE CFLS MORE
ERRANDS MORE RIDE P
MORE CONSIDER SOLAR MORE
REDUCE WOODBURNING MORE
MORE RIDE THE BUS MORE

Is the Air in Maricopa County Really that Bad?

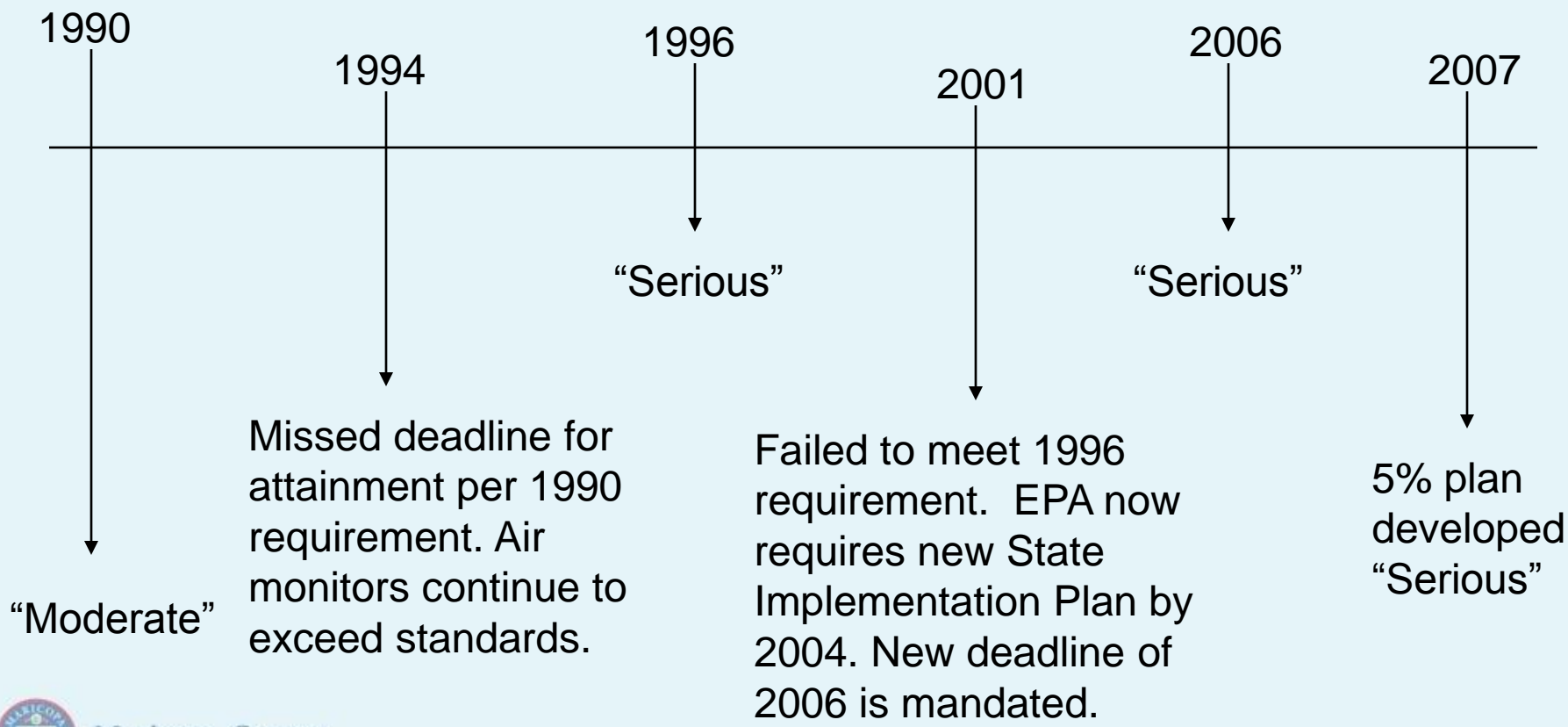
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Since When is Dust Such an Issue?
Timeline of Non-Attainment* for Maricopa County



*Non-Attainment is an EPA Designation for failure to meet Federal Air Quality Standards

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Classifications of PM-10 Non-Attainment Areas

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Classifications of Particulate Matter (PM-10) Nonattainment Areas | Green Book | US EPA - Windows Internet Explorer

US EPA http://www.epa.gov/air/oaqps/greenbk/pnc.html

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US EPA Classifications of Particulate Matter (PM-10) Nonattai...

U.S. ENVIRONMENTAL PROTECTION AGENCY

Green Book

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You are here: EPA Home » Green Book » Particulate Matter (PM-10) » Classifications of Particulate Matter (PM-10) Nonattainment Areas

Classifications of Particulate Matter (PM-10) Nonattainment Areas

As of March 12, 2008

SERIOUS

- [Clark Co, NV](#)
- [Coachella Valley, CA](#)
- [Imperial Valley, CA](#)
- [Los Angeles South Coast Air Basin, CA](#)
- [Owens Valley, CA](#)
- [Phoenix, AZ](#)
- [San Joaquin Valley, CA](#)
- [Washoe Co, NV](#)

MODERATE

- [Ajo \(Pima County\), AZ](#)
- [Anthony, NM](#)
- [Bonner Co \(Sandpoint\), ID](#)
- [Butte, MT](#)
- [Columbia Falls, MT](#)
- [Coso Junction, CA](#)
- [Eagle River, AK](#)
- [El Paso Co, TX](#)
- [Eugene-Springfield, OR](#)
- [Flathead County: Whitefish and vicinity, MT](#)

Nonattainment Areas

1-Hour Ozone

8-Hour Ozone

Carbon Monoxide

Nitrogen Dioxide

Sulfur Dioxide

PM-10

PM-2.5

Lead

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Classifications ...

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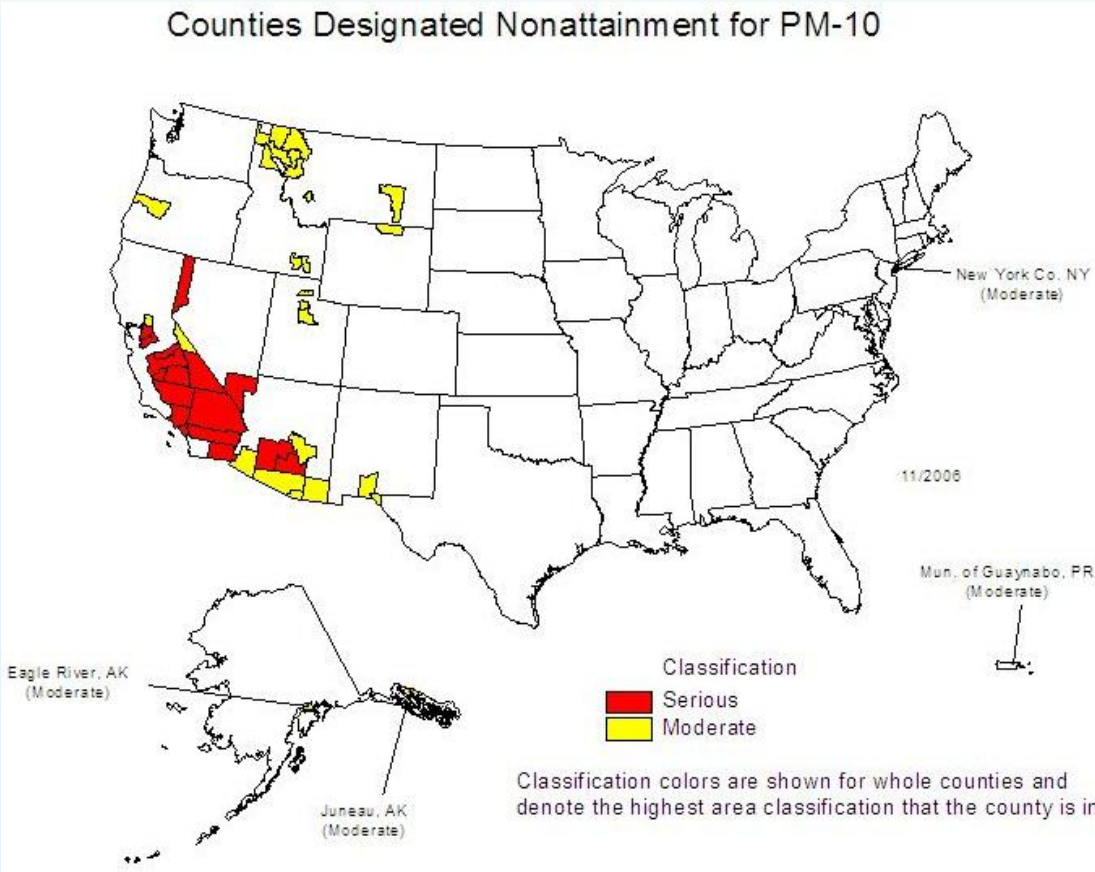
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Counties Designated Non-Attainment for PM-10

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2005 Census Survey of Maricopa County

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http://www.glendaleaz.com/services/documents/2005CensusSurveyFinalNumbers.pdf - Windows Internet Explorer

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2005 Census Survey of Maricopa County, Arizona
September 1, 2005 Estimates of Population and Housing
for Maricopa County, Places in Maricopa County, and Unincorporated Areas

	Total Resident Population	Total Resident Housing Unit Population	Total Resident non-Housing Unit Population
Maricopa County Total*	3,700,516	3,636,197	64,319
Avondale	69,356	69,182	174
Buckeye	25,406	20,557	4,849
Carefree	3,684	3,684	0
Cave Creek	4,766	4,761	5

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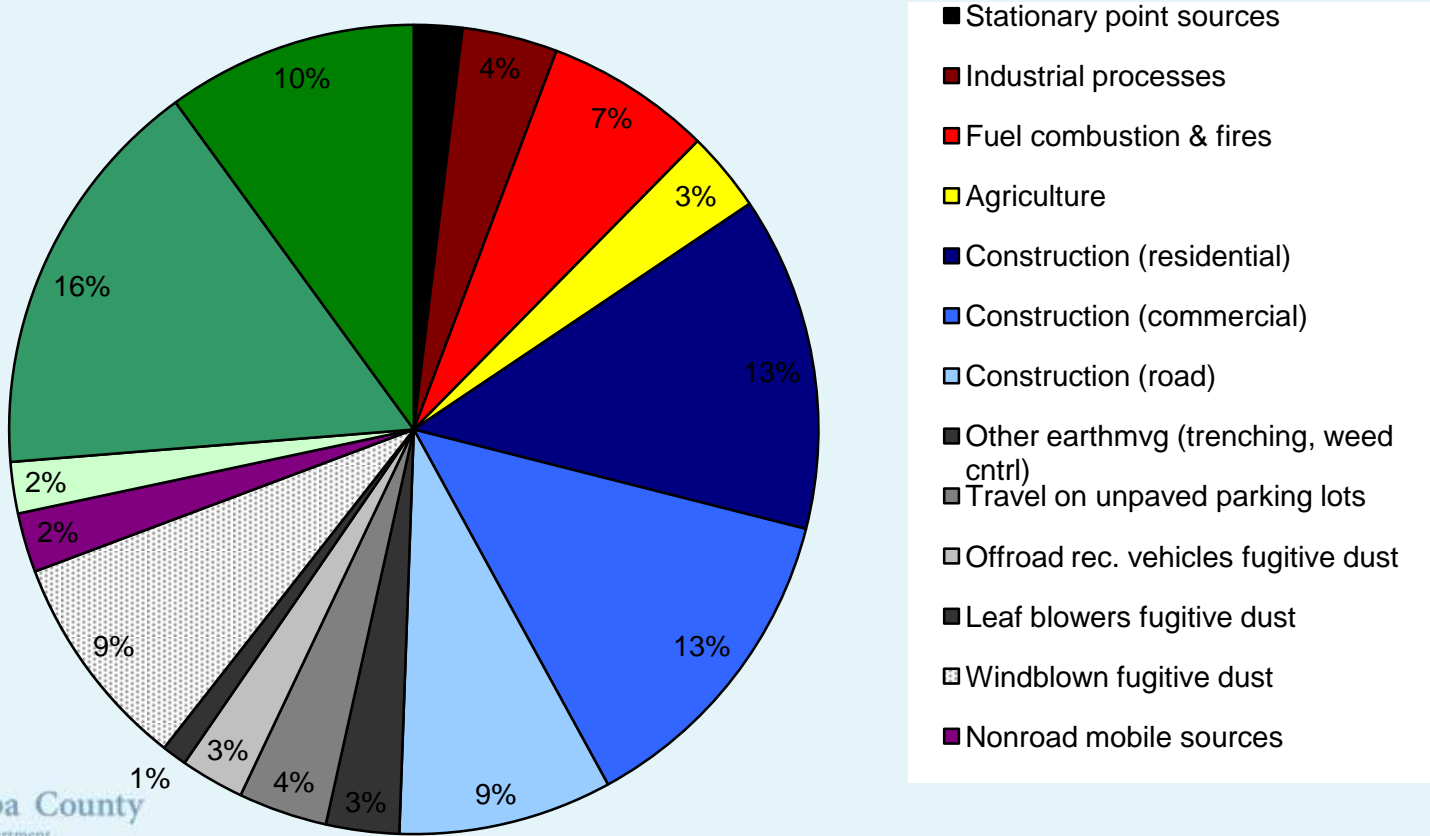
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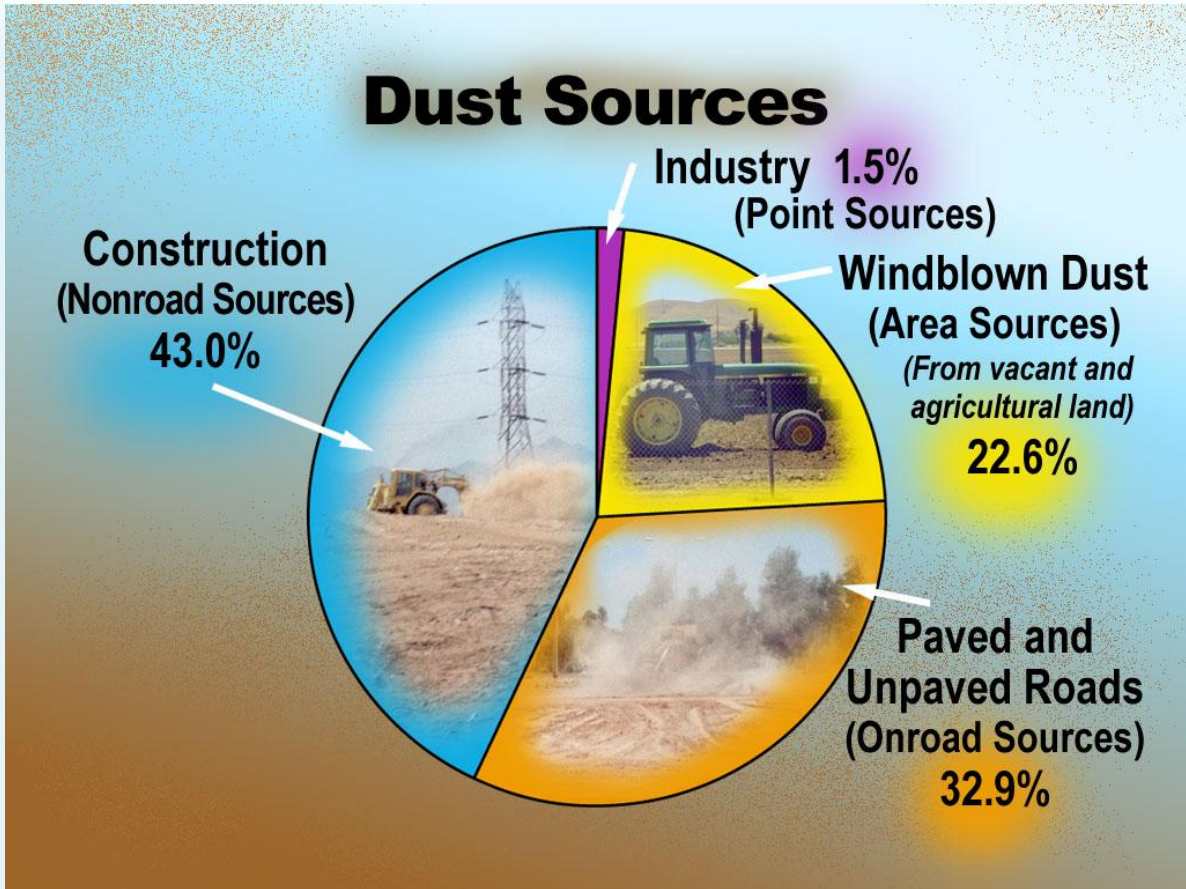
2005 PM-10 Emissions Inventory

2005 PM₁₀ Emissions Inventory

(Revised May 2007 – PM₁₀ Nonattainment Area Total = 84,753 tons/yr)



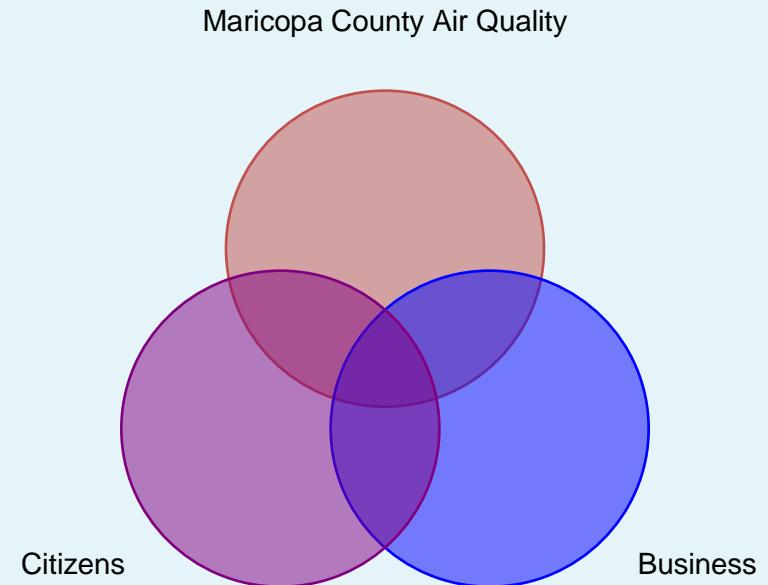
Dust Sources



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How Do We “Bust” Dust?

- MCAQD
 - Monitoring
 - Reporting
 - Education
 - Regulation: rules, inspection, enforcement
- Citizens
 - Complaints
 - Education
- Business/permit holder
 - Compliance
 - Education



Earthmoving Operation

The use of any equipment for an activity which may generate fugitive dust, such as but not limited to:

Cutting and filling

Grading, leveling

Excavating

Trenching

Loading and unloading of bulk materials

Demolishing

Blasting

Drilling

Adding to or removing bulk materials from open storage piles, back filling, soil mulching, landfill operations

Weed abatement by discing or blading



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Rule 310 (Fugitive Dust)

- Sections 300 Standards
 - 20% Opacity
 - Soil Stabilization
 - Control Measures
 - Project Information Sign
 - Work Practices
- Section 400 Administrative Requirements
 - Dust Control Plan
- Section 500 Monitoring and Records
 - Records



Project Signs

- Post in at the main entrance
- Readable by the public
- White background with at least four inch black letters
- Contain project name, permittee's name, permit number, expiration date, name and contact info of person responsible for dust control measures, text stating "Dust complaints? Call Maricopa County Air Quality Department – 602-506-6010"
- All sites \geq five acres



Project Signs

**Direct Complaint Line to Maricopa
Air Quality 602-372-2703**



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Monitoring and Records

- Any person who conducts dust generating operations that require a Dust Control Plan shall keep a daily written log.
- Any person who conducts dust generating operations which do not require a Dust Control Plan shall compile and retain records that provide evidence of control measure application.
- Retain records for six months after the termination of the dust generating operation OR two years from the date such records were initiated, whichever is longer.



Dust Control Records

- Daily logs of self-inspection for crusted or dampened soil, trackout conditions and clean-up measures, daily water usage and dust suppressant application.



Dust Control Records

- Method, frequency and intensity of application or implementation of control measures
- Method, frequency and amount of water application
- Street sweeping frequency
- Maintenance of trackout control device
- Types and results of test methods
- If contingency methods are implemented – an explanation why
- List of subcontractors and their registration numbers
- Dust control trained employees



- A subcontractor who is engaged in dust generating operations at a site that is subject to a permit that is issued by Maricopa County and that requires control of PM 10 emissions shall register with Maricopa County and have it readily accessible and visible while on-site conducting any dust generating operations.



Fugitive Dust

- The particulate matter not collected by a capture system, that is entrained in the ambient air, and is caused from human and/or natural activities, such as, but not limited to, movement of soil, vehicles, equipment, blasting, and wind
- Limited to 20% opacity
- Control with water; surfactants and dust palliatives; work methods and proper planning



What Do We Look for?

- Project signs (projects > five acres)
- Dust permit/records (opacity and stabilization records)
- Fugitive dust
- Water sources, application
- Trackout control device (is it sufficient)
- Trackout, carryout, spillage, erosion
- Bulk material handling (tarping, cleaning, mounding)
- Storage piles
- Unpaved haul roads/access points
- Weed abatement activities



Fugitive Dust Control Measures

- Control measures before, during and after a dust generating operation



Keys to Compliance

The Big 3

- Opacity - *DO NOT EXCEED 20%*
- Work Practices/Control Measures:
 - Are you following your Dust Control Plan?
 - Using water?
- Stabilization:
 - What does the site look like at the end of the day?
 - End of the project?



CLEAN AIR
MAKE
MORE

WALK MORE USE CFLS MORE
ERRANDS MORE RIDE PUBLIC
MORE CONSIDER SOLAR
REDUCE WOODBURNING
MORE RIDE THE BUS MORE

Opacity - How Can You Tell?

USE MORE CONSOLIDATE
REUSABLE TOTE BAGS
CONSERVE ELECTRICITY MORE
REFUEL AFTER DARK
BIKE MORE RAKE MORE



20 % Opacity



80 % Opacity



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Opacity Training

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REFUEL AFTER DARK
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ASU SMOKE SCHOOL

Al Brown (480) 727-1322

al.brown@asu.edu

ARIZONA SMOKE SCHOOL

Arizona Smoke School

10408 S. 43rd Place

Phoenix, AZ 85044

Contact – Fred Ellis (480) 226-0945

fred@arizonasmokeschool.com

CARL KOONTZ

Carl Koontz Associates

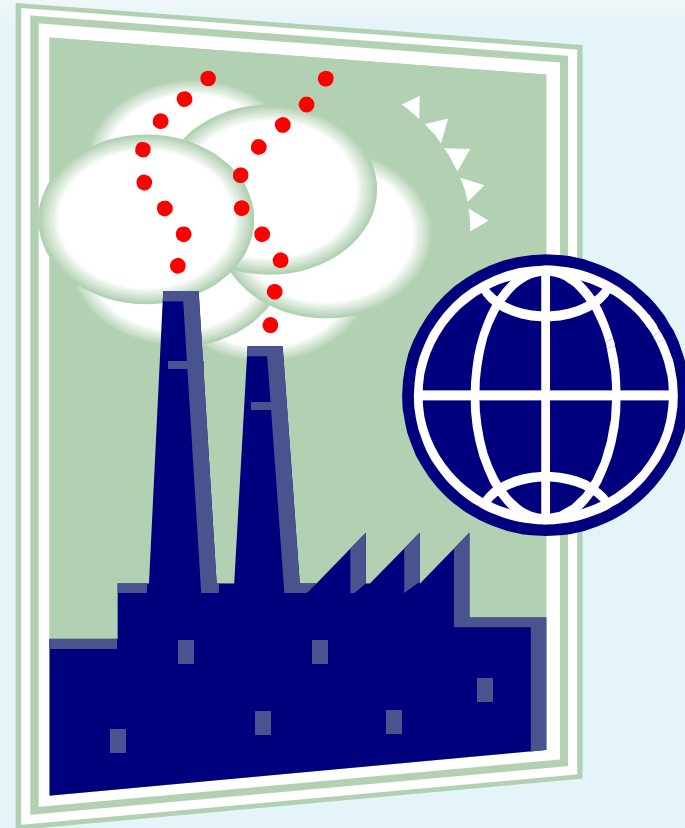
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Opacity and Work Practices

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Back-Filling Trenches Without Water

USE MORE CONSOLIDATE
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Visible Emissions Beyond Property Line

- The owner and/or operator of a dust generating operation shall not cause or allow visible dust emissions to remain visible in the atmosphere beyond the property line
 - EPA method 22



Property Line

- The boundaries of an area in which either a person causing the emissions or a person allowing the emission has the legal use or possession of the property.
- Do not mistake a fenced area with a property line.



Trackout Control Device

- Gravel pad, grizzly, wheel wash system, pavement of least 100x20 ft, or combination of the above.
- Located at all exits egressing onto paved areas accessible to the public (*roads, parking lots, etc*).
- Required on projects greater than two acres.
- Required when importing or exporting 100 cubic yards of bulk material in a single day.



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Trackout Control Device

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Trackout, Carryout, Spillage and Erosion

- Any and all bulk materials that adhere to and agglomerate on the surfaces of motor vehicles, haul trucks, and/or equipment (including tires) and that have fallen or been deposited onto a paved area accessible to the public (includes rocks and stones).

Less than 25 feet: must be cleaned at the end of the work day (work shift).

Greater than 25 feet: must be cleaned immediately.



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Trackout Can be a Public Safety Issue as Well

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Stabilization

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MAKE
MORE

WALK MORE USE CFLS MORE
ERRANDS MORE RIDE PUBLIC
MORE CONSIDER SOLAR MORE
REDUCE WOODBURNING MORE
MORE RIDE THE BUS MORE

Stabilization

ES MORE CONSOLIDATE
REUSABLE TOTE BAGS
CONSERVE ELECTRICITY MORE
REFUEL AFTER DARK
BIKE MORE RAKE MORE



Maricopa County
Air Quality Department

DRIVE HYBRIDS MORE CONSOLIDATE ERRANDS MORE RIDE PUBLIC TRANSPORTATION MORE USE ENERGY EFFICIENT APPLIANCES MORE CARRY REUSABLE
TOTE BAGS MORE CONSIDER SOLAR MORE RUN COLD WATER CYCLES MORE USE REUSABLE CONTAINERS MORE CONSERVE ELECTRICITY MORE REDUCE
WOODBURNING MORE RECYCLE MORE USE ELECTRIC LAWN AND GARDEN EQUIPMENT MORE REFUEL AFTER DARK MORE RIDE THE BUS MORE WALK MORE

Dust Control Training Certification

Basic Training

- At least once every three years
- On all sites with one to five acres disturbed surface area
- Site's superintendent or other designated representative
- Water truck and water pull drivers
- No later than December 31, 2008



Dust Control Training Certification

Comprehensive Training

- At least once every three years
- On all sites greater than five acres
- Person with the authority to ensure that dust control measures are implemented on site - Dust Control Coordinator
- Certification must be readily accessible on-site
- Must be VE certified
- No later than June 30, 2008



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Considerations

- Administrative requirements
- Recordkeeping requirements
- Dust control coordinator
- Control measure effectiveness
- Stability in all unpaved areas
- Developing issues on site
- Work practices
- Community
- Role of the inspector



Dust Supervisor
602-506-6734

Training Questions
602-372-1467



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THE PROBLEM THE EFFECTS THE OFFENDERS THE SOLUTION EDUCATION PARTNERS

Together we can make more clean air.

February 12

More Air Quality Info

MAKE THE CLEAN AIR COMMITMENT

Clean Air FACTS

1 2 3

One gas mower spews 87 lbs. of the greenhouse gas CO₂, and 54 lbs. of other pollutants into the air every year.

The Problem | The Effects | The Offenders | The Solution | Education | Partners | Media | En español | Contact | Privacy Policy

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References

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- US Environment Protection Agency - Region 9 Air Quality <http://earth1.epa.gov/region09/air/index.html>
- MCAQD Campaign - www.cleanairmakemore.com
- The Dust Devil Academy developed by ASU in 2000 - http://www.maricopa.gov/aq/divisions/compliance/dust/dust_sources/GUIDES.ASPX

